



April 2, 2015

249069

Mr. Mark Pattillo, Project Manager  
U.S. Army Corps of Engineers  
Corpus Christi Regulatory Field Office  
5151 Flynn Parkway, Suite 306  
Corpus Christi, Texas 78404

**RE: RESPONSE TO ADDITIONAL RESOURCE AGENCY COMMENTS SWG-2014-00848 CHENIERE LIQUIDS TERMINAL, LLC - CHENIERE INGLESIDE MARINE TERMINAL**

Dear Mr. Pattillo:

**I. INTRODUCTION/BACKGROUND**

Per your e-mails dated March 19th and 23rd, 2015, the purpose of this letter is to respond to additional comments submitted by the Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS), and the Texas Parks and Wildlife Department (TPWD) in association with SWG-2014-00848, Cheniere Ingleside Marine Terminal. It is our understanding that EPA, NMFS, and TPWD provided USACE with additional comments in response to Cheniere Liquids Terminal's (CLT) initial response to resource agency comments dated March 11, 2015. CLT's responses to the most recent resource agency comments are in the order presented in emails dated March 19<sup>th</sup> and 23<sup>rd</sup>, 2015.

**II. ADDITIONAL EPA COMMENTS AND CLT RESPONSES**

1. Comment: We thank the applicant for providing an alternatives analysis. While it is brief, it does include consideration of environmental impacts, unlike some alternatives analysis we have received. However, the description of the specific environmental tradeoffs among the various alternatives is somewhat unclear. We think the applicant is saying that the diagonal or perpendicular berth options would impact more seagrass than the parallel berth, but the diagonal or perpendicular berth options would impact less emergent wetland. Is that the correct interpretation? We request the applicant clarify this. In addition, it would be desirable to report estimates of the acreage of these habitats that would be impacted by each of these alternatives. Finally, if the applicant does not select the

least environmentally damaging alternative, they should explain why the least environmentally damaging alternative is not "practicable."

**Response:** EPA is correct in their interpretation that the diagonal or perpendicular berth options would likely impact more seagrass than the parallel berth due to dredging that would occur within seagrass beds located along the western shoreline of the La Quinta Ship Channel near Dredge Material Placement Area (DMPA) 13. A typical turning basin associated with the diagonal or perpendicular berth would be approximately 1,500 feet in diameter (based on the maximum size of vessels expected to utilize the CLT facility). Based on this turning basin size, approximate permanent impacts to seagrass would be +/- 20 acres, which is approximately 17 more acres of permanent seagrass impacts than the proposed parallel berth option (2.91 acres). In addition, secondary effects of constructing the diagonal or perpendicular berth would include potential prop-washing and turbidity effects on neighboring seagrasses, navigational impacts to other vessels utilizing the La Quinta Ship Channel, and impacts associated with manipulating side slopes of the federal channel to achieve appropriate basin depth and dimensions.

EPA is incorrect in their interpretation that the diagonal or perpendicular berth would impact less emergent wetland. The diagonal or perpendicular berth would impact more emergent wetland habitat located on the eastern edge of DMPA 13 (directly across La Quinta Ship Channel from the project site) because it would be necessary to excavate this area in order to construct the diagonal berth and turning basin. This could also compromise the integrity of the levees on DMPA 13. Based on results of the alternatives analysis, the applicant has selected the least environmentally damaging practicable alternative.

2. Comment: We appreciate the applicant's offer to endeavor to conduct dredging and discharge from the DMPA during the seagrass dormant period. However, EPA continues to recommend that the COE include a requirement in the permit that the applicant be restricted to dredging and discharge from the DMPA during the seagrass dormant period, November-February.

**Response:** As previously stated in CLT's Response to Comments letter dated March 11, 2015, CLT will endeavor to conduct dredging and discharge from

the DMPA during the seagrass dormant period. However, due to the approximate 4-month duration for dredging activities and scarcity of available dredge equipment (making scheduling problematic), it is likely unfeasible to limit work to within the requested seasonal window. If dredging and discharge is conducted outside of the seagrass dormant period, the applicant will employ Best Management Practices (BMPs) typically used for dredging and construction in the vicinity of seagrass beds. BMPs may include weighted silt screens.

3. Comment: We request the applicant explain their conclusion that if the TSS concentration in the discharge from the DMPA is kept below 300 mg/l, the discharge will not compromise the Seagrass Propagation designated use under the Texas water quality standards. While a determination regarding whether or not the discharge will result in water quality criteria is important, the determination of whether or not the discharge might negatively affect seagrasses can be separate matter, albeit one with significantly different regulatory implications. A TSS concentration of 300 mg/l may meet the water quality, and yet, might not protect seagrasses. To our knowledge, nobody has determined how a 300 mg/l TSS concentration in the volume of effluent that will result from the proposed dredged material discharge into the DMPA the dredged material is proposed to be discharged into, at the specific discharge locations for that DMPA, may affect light attenuation on nearby seagrass beds, and thus seagrass health and productivity. We continue to be concerned that such discharge may negatively impact seagrass health and productivity.

**Response:** As previously stated in CLT's Response to Comments letter dated March 11, 2015, the applicant has agreed to maintain Total Suspended Solids (TSS) below the Railroad Commission (RRC) of Texas' water quality threshold of 300 mg/l (which is in accordance with State water quality standards). Return water discharges resulting from dredged material disposal into proposed upland DMPAs will be temporary in nature and, therefore, should not negatively impact seagrass health and productivity. In addition, the applicant will employ Best Management Practices (BMPs), including the use of weighted silt screens and turbidity curtains typically used for dredging and construction in the vicinity of seagrass beds.

According to a study in the Marine Pollution Bulletin entitled "*Environmental Impacts of Dredging on Seagrasses: A Review*"<sup>1</sup>, seagrasses can tolerate

periods of naturally high turbidity and can withstand some increase in the frequency of turbid events. Turbidity is unlikely to be continuous at any particular site due to changes in wind and tidal conditions but also due to dredge location and rate. In areas that experience large natural fluctuations in background turbidity (especially in estuarine environments), seagrasses and other benthic communities often display a greater resilience than in areas where natural turbidity fluctuations are minimal. TSS in Corpus Christi Bay can exceed 300 mg/l during windy conditions that are typical in the area. Discharge from the upland DMPAs could likely have less turbidity than the receiving water. In a study entitled "*The Effects of In Situ Light Reduction on the Growth of Two Subtropical Seagrasses, Thalassia Testudinum and Halodule Wrightii*"<sup>2</sup>, researchers found that both species can survive below their minimum light requirements of 10% Surface Irradiance (S) I and 11-15% SI for periods of 9 (*Halodule wrightii*) to 11 months (*Thalassia testudinum*).

Dredging activities associated with the CLT project are estimated to have a duration of approximately 4 months which is under the threshold periods for survival of the aforementioned seagrass species. Therefore, it is unlikely that temporary dredging activities and associated upland placement will negatively impact seagrass health and productivity due to the abbreviated duration of the dredging event.

4. Comment: We appreciate the applicant's offer to employ BMPs if dredging and discharge is conducted outside of the seagrass dormant period. However, we continue to recommend that the COE include a requirement in the permit that the applicant be restricted to dredging and discharge from the DMPA during the seagrass dormant periods, November-February. We also continue to recommend that the permit include requirements for the applicant to employ all best management practices typically required of dredging and construction projects in the immediate vicinity of seagrasses, with no consideration given to whether the dredging is conducted outside of the seagrass dormant period, or not.

<sup>1</sup> Erftmeijer, P.A and Roy Robin Lewis III. 2006. Environmental impacts of dredging on seagrasses: a review. Marine Pollution Bulletin. Issue 52. Pgs. 1553-1572.

<sup>2</sup> Czerny, A.B., Dunton, K.H., 1995. The effects of in situ light reduction on the growth of two subtropical seagrasses, *Thalassia testudinum* and *Halodule wrightii*. Estuaries 18, 418-427.

**Response:** As previously stated in CLT's Response to Comments letter dated March 11, 2015, CLT will endeavor to conduct dredging and discharge from the DMPA during the seagrass dormant period. However, due to the approximate 4-month duration for dredging activities and scarcity of available dredge equipment (making scheduling problematic), it is likely unfeasible to limit work to within the requested seasonal window. If dredging and discharge is conducted outside of the seagrass dormant period, the applicant will employ Best Management Practices (BMPs) typically used for dredging and construction in the vicinity of seagrass beds. BMPs may include weighted silt screens.

5. Comment: While we are surprised that there are apparently no viable options for beneficial use of this dredged material, beneficial use of dredged material is voluntary. We appreciate the applicant's consideration.

**Response:** No response required.

6. Comment: We appreciate the applicant's willingness to test the sediments and soils at the project site. We recommend the applicant use the Upland Testing Manual to guide sampling and analysis of the proposed dredged material. More specifically, we recommend the applicant conduct elutriate testing to determine whether water quality criteria will be met upon discharge of effluent from the DMPA they will be using.

We do not recommend sampling soils at the mitigation site to -20 feet MLT. Rather, we recommend only sampling the depth of soil proposed to be excavated and presumably disposed of somewhere. We also don't see a need to analyze for boron and lime.

**Response:** The applicant's sampling and analysis of proposed dredged material is based on the U.S. Army Corps of Engineers (USACE) Upland Testing Manual. In addition, the applicant will conduct elutriate testing to determine whether water quality criteria will be met upon discharge of return water from the DMPA they will be using.

**A soil analysis will be conducted throughout each sub-surface boring from the ground surface to -20 ft. MLT in order to analyze common Constituents of**

**Concern (COCs) and also for geotechnical purposes related to design of the mitigation site.**

7. Comment: This comment does not apply to TSS. It applies to the question of whether or not water quality criteria for numerous contaminants, including metals, pesticides, PCBs, PAHs, and other contaminants, are met near the discharge, after allowance for mixing. This is discussed in the Upland Testing Manual. The required analysis is based on the results of elutriate analysis typically, though it can be done using bulk sediment chemistry. We recommend that results of dredged material testing be made available to EPA and other agencies, for review and comment, prior to permit issuance.

**Response: As previously stated under EPA Comment 6 above, the USACE Upland Testing Manual will be utilized to guide sampling and analysis of dredged material. This will include elutriate testing to determine whether water quality criteria will be met upon discharge of return water from the DMPA. Analysis of the soil samples will be conducted by a certified/licensed lab. If results indicate that COCs do not exceed threshold levels, results will not be provided to resource agencies for review and comment. If results indicate that COCs thresholds are exceeded, this information will be shared with resource agencies with the stipulation that their review and comments are not necessary prior to permit issuance.**

8. Comment: Based on the applicants' response, it may be possible to conclude that salinity is not a concern for seagrass at the proposed mitigation location. The applicant apparently did not address our questions regarding nutrients and turbidity. Because of uncertainty regarding the proposed mitigation, EPA recommends a special condition be added to the permit that requires a minimum monitoring period of five years post construction. EPA also recommends all statements that the USACE may determine a monitoring plan less than five years to be adequate should be eliminated from the permitted plan and should not be included as a special condition.

EPA recommends that after five years of monitoring the USACE, in coordination with other natural resource agencies, should make a determination whether or not the mitigation site is successful, whether adaptive management actions are still warranted onsite to correct deficiencies, or whether additional off-site mitigation is warranted to ensure impacts to wetlands and other special aquatic sites (e.g.

seagrasses) are successfully mitigated. EPA recommends that if USACE determines the mitigation site is not fully successful after the fifth year of monitoring, additional mitigation should be required to compensate for five years of temporal losses of wetland and seagrass functions. A special condition should be added to the permit to reflect this requirement.

**Response:** At this time, the potential nutrient level within the proposed mitigation wetlands is inferred through the salinity and water level data collection. Excessive nutrients that could cause an algal bloom would be most likely to come from the freshwater effluent of the wastewater treatment plant. From the salinity data collection and water level monitoring, it was observed that the area in which the mitigation wetlands would be connected to Kinney Bayou has a significant tidal influence and has salinity levels comparable to the open bay. This means that the wetland would be receiving good flushing through the Jewell Fulton Canal, helping to significantly dilute any freshwater (and inferred nutrients) that may enter the mitigation wetland areas from upstream portions of Kinney Bayou. Finer details of the wetland areas will be developed during final design, which will include numerical modeling to help enhance the flushing ability of the mitigation wetlands. Of note, the original mitigation plan concept included a channel at the north end of the western mitigation wetland area connecting it to Kinney Bayou. This connection will be removed to help reduce freshwater (nutrient) inflow. Revised mitigation plan drawings will be submitted to USACE once refinement of the design is completed.

As previously stated in the Mitigation Plan under Item 9 "Monitoring Requirements" on Page 7 of 8, annual monitoring of the mitigation site will be conducted for a period of five years. The proposed five year monitoring period is based on conventional USACE Galveston District practice and is included in USACE Regulatory Guidance Letter (RGL) 08-03. As per USACE RGL 08-03, if a compensatory mitigation project has met its performance standards in less than five years, the monitoring period length can be reduced, if there are at least two consecutive monitoring reports that demonstrate that success. Therefore, the applicant requests that the statement that allows USACE to determine if the monitoring plan of less than five years is adequate, remain in the permitted plan.

### III. ADDITIONAL NMFS COMMENTS AND CLT RESPONSES

1. Comment: The agent states they will perform an in-depth assessment of circulation that will examine the influence of freshwater effluent within Kinney Bayou and how it may affect the mitigation site. The agent also states that the initial mitigation site design shown in the permit drawings will then be redesigned as needed to reduce the amount of freshwater entering the mitigation area. We appreciate the agent will continue to analyze the mitigation site design and refine it as they learn more information. However, the information they will glean from this analysis is not available currently at the time NMFS and USACE must review and evaluate the pending permit application.

NMFS still feels there is uncertainty and risk associated with the ability to maintain seagrasses over time at the selected mitigation site due to nutrient enriched wastewater within Kinney Bayou, which may fuel excessive algal growth inhibiting the long-term viability of seagrasses by reducing light penetration to the seagrass blades. This problem may not be evident during initial monitoring events. Therefore, NMFS HCD continues to recommend a special condition be added to the permit which requires a minimum mitigation monitoring period of five years. NMFS HCD also maintains that a special condition should be added to the permit that states USACE will require additional mitigation to compensate for temporal losses of EFH function and values if the mitigation site is not fully successful after the fifth year of mitigation site monitoring.

**Response:** There are several factors that CLT feels will influence success of the mitigation site including: (1) proximity to Corpus Christi Bay and associated tidal influence, (2) presence of neighboring sites that contain similar habitat to those being targeted within the mitigation plan, (3) design of the mitigation site to limit the amount of fresh water from Kinney Bayou into the mitigation site (and thus provide salinities conducive to growth of seagrass), (4) sampling and analysis of sediments to determine suitability of soils to be planted. USACE requires 5-year monitoring of mitigation sites as part of RGL 08-03 to ensure that mitigation performance standards are met. If after 5 years the mitigation site has not met the performance standards, an adaptive management plan included in Item 11 "Adaptive Management Plan" of the previously submitted Mitigation Plan (dated March 11, 2015), will be implemented. This plan will include discussions with USACE to determine an appropriate course of action to ensure mitigation site success. Example

**remedies may include, but are not limited to, planting efforts, alternative sites, or other remedies.**

#### **IV. ADDITIONAL TPWD COMMENTS AND CLT RESPONSES**

1. Comment: TPWD was concerned that the mitigation site was not conducive for success of seagrass planting due to salinity and nutrient loading. The applicant's response was that they performed a 1 week observation of tidal gauge levels to estimate the circulation that would occur in the mitigation site. The duration and basic information gleaned from this observation does not provide sufficient evidence that the mitigation will be successful. In addition, there was no mitigation proposed for impacts to filling the palustrine habitat within the project site.

**Response: Please see response to EPA Comment II.8 above. In regards to mitigation for palustrine habitat at the project site, the Approved Jurisdictional Determination (AJD) process is currently on-going with USACE and EPA. Preliminary findings of man-made palustrine features at the project site (Man-made Ponds 1-3 and additional Wetland Feature 4) indicate these areas to be isolated and non-jurisdictional. Therefore, no mitigation is being proposed for these palustrine features since they will likely be determined non-jurisdictional by USACE and EPA.**

2. Comment: Applicant did not provide sufficient details in creation of the seagrass mitigation. The applicant did provide the seagrass species and the source of the plants for the mitigation areas as well as describing their projection of the circulation patterns based on a study of tidal gauges. The applicant did not provide any information on nutrient levels that could impact the water quality within the mitigation site.

**Response: The applicant did provide the species of seagrasses and the source of the plants to be planted within the revised Mitigation Plan (under "Mitigation Work Plan" on Page 6 of 8) submitted on March 11, 2015. To reiterate, the species of seagrass to be planted are *Halodule wrightii* and *Syringodium filiforme*. Plant material will be obtained from on-site or commercial sources. In regards to circulation patterns and nutrient levels within the mitigation site please see response to TPWD Comment IV.1 above.**

3. Comment: Due to the continuing concerns about the success of the mitigation plan, TPWD recommends a special condition be added to the permit which requires a minimum mitigation monitoring period of five years. TPWD also recommends that a special condition should be added to the permit that states USACE will require additional mitigation to compensate for temporal losses of seagrass habitat if the mitigation site is not fully successful after the fifth year of mitigation site monitoring.

**Response: Please see response to NMFS Comment III.1 above.**

## **V. CLOSING**

In closing CLT believes we have given full consideration and have been fully responsive to the issues raised. If you need additional information for you to complete your review and to issue the permit as proposed, please contact our agent Chemaine Koester/HDR at (361) 696-3381 or [Chemaine.Koester@hdrinc.com](mailto:Chemaine.Koester@hdrinc.com).

Thank you very much for your time and for your expeditious handling of this permit application.

Sincerely,

HDR ENGINEERING, INC.



Chemaine Koester  
Senior Environmental Biologist

CSK/jcm

cc: Catherine Mayhew, CLT  
Jonathan Rosenbaum, CLT